

TABLE 2. VISCOSITY CHANGE RELATIVE TO NEAT PP AT HIGH STRESS/LOW-MODERATE SHEAR RATE

Sample number	Solid composition	Particle size (mesh/microns)	Viscosity at 180°C				Viscosity at 200°C			
Stress (Pa)			721	3822	6154	7809	353	3012	3822	6154
A. NEAT PP		--	2441	2100	1348	1049	1025	870	781	372
B. AMORPHOUS SOLIDS										
A1	Natural Al-Si	800	-1%	-14%	-23%	-38%	0%	-10%	-25%	+4%
A2	Natural Al-Si	800	0%	-22%	-18%	-16%	+14%	-4%	-8%	+27%
A3	Opal	800	--	--	--	--	--	--	--	--
A4	Synthetic Al-Si	800	+3%	+4%	-7%	-21%	+12%	-4%	-1%	+22%
A5	Carbon	1200	+1%	+2%	+2%	-13%	+12%	+4%	-3%	+16%
C. AMORPHOUS/CRYSTALLINE										
A1	Natural Al-Si 90%/10%	325	-3%	-19%	-6%	-9%	+9%	-11%	-32%	--
A1	Natural Al-Si 50%/50%	325	-2%	-3%	0%	+5%	+1%	-16%	-24%	+8%
A1	Natural Al-Si 10%/90%	325	-2%	-4%	-1%	--	+2%	-16%	-21%	+13%
D. PARTICLE SIZE										
A1	Natural Al-Si	270	--	--	--	--	--	--	--	--
A1	Natural Al-Si	325	-2%	-8%	+6%	-4%	-1%	-19%	-24%	--
A1	Natural Al-Si	800	-1%	-14%	-23%	-38%	0%	-10%	-25%	+4%
A1	Natural Al-Si	30-45	-2%	-10%	+3%	-7%	+8%	-1%	-5%	+19%
A1	Natural Al-Si	15-30	-3%	-3%	+10%	-4%	+7%	-13%	-23%	--
A1	Natural Al-Si	9-15	-1%	-3%	+10%	-4%	+7%	-13%	-23%	--
A1	Natural Al-Si	5-9	-2%	-18%	-7%	-11%	-2%	-10%	-10%	+18%
A1	Natural Al-Si	2-7	-2%	-12%	+2%	+10%	-3%	-9%	-11%	+10%
A1	Natural Al-Si	<4	+1%	-7%	-14%	-14%	+4%	-9%	-17%	+1%

E. CONCENTRATION (WT PERCENT)										
A1	Natural Al-Si (0.4%)	800	0%	-2%	-10%	--	+4%	-6%	-11%	+21%
A1	Natural Al-Si (0.75%)	800	-1%	-14%	-23%	-38%	0%	-10%	-25%	+4%
A1	Natural Al-Si (0.75%)	325	-3%	-19%	-7%	-6%	+6%	-11%	-31%	--
A1	Natural Al-Si (1.5%)	325	-1%	-11%	-6%	-8%	+5%	-7%	-12%	-8%
F. CRYSTALLINE COMPOSITION										
C1	Calcite (carbonate)	800	+5%	+4%	+4%	-3%	+2%	-8%	-11%	+38%
C2	Apatite (phosphate)	800	+3%	+7%	-6%	-2%	+9%	-8%	-18%	+8%
C3	Bentonite (clay)	800	+5%	+4%	-12%	-25%	+18%	+12%	+5%	+42%
C4	Talc (Mg silicate)	800	+2%	+1%	+4%	+2%	+10%	-4%	-4%	+56%
C5	Copper	1200	+2%	+4%	+33%	+37%	+7%	0%	0%	+23%
C6	Lead oxide	1200	+1%	+2%	+19%	+27%	-2%	-5%	-6%	+6%
C7	Quartz	800	-1%	+1%	+5%	+6%	+11%	-1%	-1%	-9%
G. MILLING METHOD										
A2A	Natural Al-Si	800	0%	-22%	-18%	-16%	+14%	-4%	-8%	+27%
A2B	Natural Al-Si	800	+7%	-1%	+5%	+6%	+13%	+8%	+2%	+35%
A1A	Natural Al-Si	325	-2%	-8%	+6%	-4%	-1%	-19%	-24%	--
A1C	Natural Al-Si	325	-3%	-19%	-6%	-9%	+6%	-11%	-31%	--